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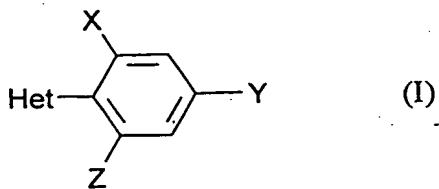
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Patent Claims

Compounds of the formula (I)



in which

X represents halogen,

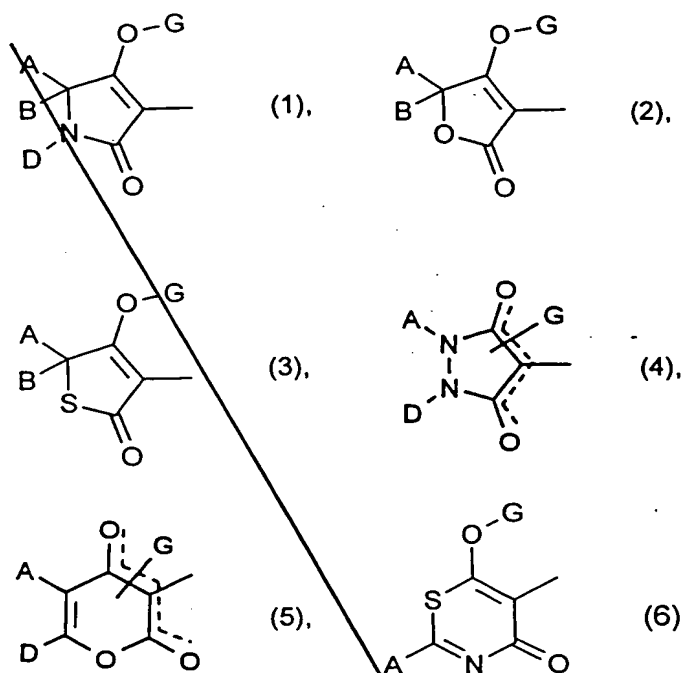
Y represents halogen or alkyl and

Z represents halogen or alkyl,

with the proviso that always one of the radicals Y and Z represents halogen and the other represents alkyl,

Het represents one of the groups

contd.
a²



in which

A represents hydrogen, or represents alkyl, alkenyl, alkoxyalkyl, polyalkoxyalkyl or alkylthioalkyl, each of which is optionally substituted by halogen, or represents in each case saturated or unsaturated and optionally substituted cycloalkyl or heterocyclyl, or represents aryl, arylalkyl or hetaryl, each of which is optionally substituted by halogen, alkyl, halogenoalkyl, alkoxy, halogenoalkoxy, cyano or nitro,

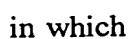
B represents hydrogen, alkyl or alkoxyalkyl, or

A and B together with the carbon atom to which they are bonded represent a saturated or unsaturated, optionally substituted carbocycle or heterocycle,

D represents hydrogen or an optionally substituted radical from the series consisting of alkyl, alkenyl, alkynyl, alkoxyalkyl, polyalkoxyalkyl, alkylthioalkyl, saturated or unsaturated cycloalkyl, saturated or unsaturated heterocyclyl, arylalkyl, aryl, hetarylalkyl or hetaryl, or

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G, in the event that Het represents one of the radicals (1), (2), (3), (5) or (6), represents hydrogen (a) or, in the event that Het represents one of the radicals (1), (2), (3), (4), (5) or (6), represents one of the groups



L represents oxygen or sulphur,

R¹ represents alkyl, alkenyl, alkoxyalkyl, alkylthioalkyl or polyalkoxyalkyl, each of which is optionally substituted by halogen, or represents cycloalkyl or heterocyclyl, each of which is optionally substituted by halogen, alkyl or alkoxy, or represents in each case optionally substituted phenyl, phenylalkyl, hetaryl, phenoxyalkyl or hetarylloxyalkyl,

20 R³, R⁴ and R⁵ independently of one another represent alkyl, alkoxy, alkylamino

control.
a²

dialkylamino, alkylthio, alkenylthio or cycloalkylthio, each of which is optionally substituted by halogen, or in each case represent optionally substituted phenyl, benzyl, phenoxy or phenylthio,

5

R⁶ and R⁷ independently of one another represent hydrogen, or represent alkyl, cycloalkyl, alkenyl, alkoxy or alkoxyalkyl, each of which is optionally substituted by halogen, or represent in each case optionally substituted phenyl or benzyl, or together with the N atom to which they are bonded represent an optionally substituted cycle which optionally contains oxygen or sulphur.

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2. Compounds of the formula (I) according to Claim 1 in which

X represents halogen,

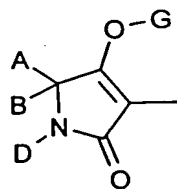
Y represents halogen or C₁-C₆-alkyl,

Z represents halogen or C₁-C₆-alkyl,

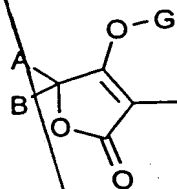
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where always one of the substituents Y and Z represents halogen, while the other represents alkyl,

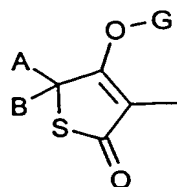
Het represents one of the groups



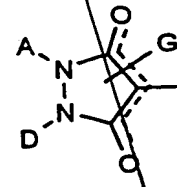
(1).



(2).

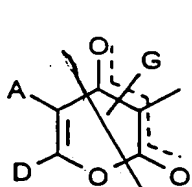


(3).

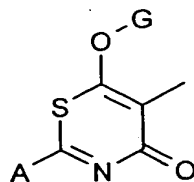


(4).

contd.
a²



(5).



(6)

A represents hydrogen, or represents C₁-C₁₂-alkyl, C₂-C₈-alkenyl, C₁-C₁₀-alkoxy-C₁-C₈-alkyl, poly-C₁-C₈-alkoxy-C₁-C₈-alkyl or C₁-C₁₀-alkylthio-C₁-C₆-alkyl, each of which is optionally substituted by halogen, or represents C₃-C₈-cycloalkyl which is optionally substituted by halogen, C₁-C₆-alkyl or C₁-C₆-alkoxy and in which one or two methylene groups which are not directly adjacent are optionally replaced by oxygen and/or sulphur, or represents phenyl, naphthyl, phenyl-C₁-C₆-alkyl, naphthyl-C₁-C₆-alkyl or hetaryl having 5 or 6 ring atoms and one to three hetero atoms from the series consisting of oxygen, sulphur and nitrogen, in each case optionally substituted by halogen, C₁-C₆-alkyl, C₁-C₆-halogenoalkyl, C₁-C₆-alkoxy, C₁-C₆-halogenoalkoxy, cyano or nitro,

B represents hydrogen, C₁-C₁₂-alkyl or C₁-C₈-alkoxy-C₁-C₆-alkyl, or

A, B and the carbon atom to which they are bonded represent C₃-C₁₀-cycloalkyl or C₅-C₁₀-cycloalkenyl in each of which a methylene group is optionally replaced by oxygen or sulphur and which are optionally substituted by C₁-C₈-alkyl, C₃-C₁₀-cycloalkyl, C₁-C₈-halogenoalkyl, C₁-C₈-alkoxy, C₁-C₈-alkylthio, halogen or phenyl, or

A, B and the carbon atom to which they are bonded represent C₅-C₆-cycloalkyl which is substituted by an alkylenediyl group which optionally contains one or two oxygen and/or sulphur atoms or by an alkylenedioxy or by an alkylenedithioyl group, this group, together with the carbon atom to which it is bonded forming a further five to eight-membered ring, or

A, B and the carbon atom to which they are bonded represent C₃-C₈-

contd.
Q 2

cycloalkyl or C₅-C₈-cycloalkenyl in which two substituents together with the carbon atoms to which they are bonded represent C₃-C₆-alkanediyl, C₃-C₆-alkenediyl or C₄-C₆-alkanedienediyl, each of which is optionally substituted by C₁-C₆-alkyl, C₁-C₆-alkoxy or halogen and in which in each case one methylene group is optionally replaced by oxygen or sulphur,

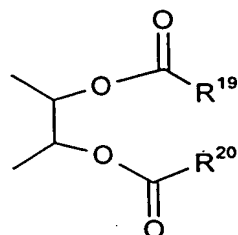
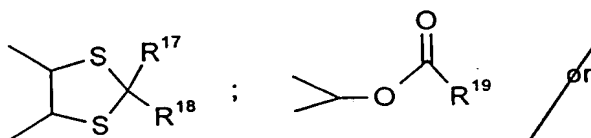
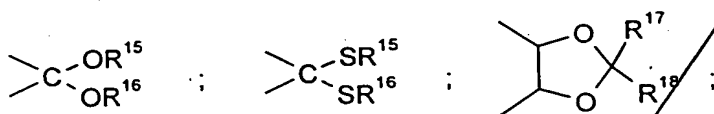
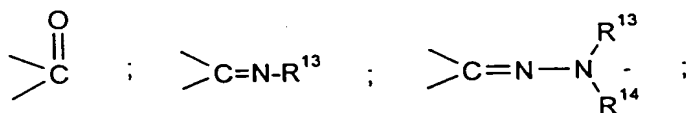
D represents hydrogen, or represents C₁-C₁₂-alkyl, C₃-C₈-alkenyl, C₃-C₈-alkinyl, C₁-C₁₀-alkoxy-C₂-C₈-alkyl, poly-C₁-C₈-alkoxy-C₂-C₈-alkyl or C₁-C₁₀-alkylthio-C₂-C₈-alkyl, each of which is optionally substituted by halogen, or represents C₃-C₈-cycloalkyl which is optionally substituted by halogen, C₁-C₄-alkyl, C₁-C₄-alkoxy or C₁-C₄-halogenoalkyl and in which one or two methylene groups which are not directly adjacent are optionally replaced by oxygen and/or sulphur, or represents phenyl, hetaryl having 5 to 6 ring atoms and one or two hetero atoms from the series consisting of oxygen, sulphur and nitrogen, phenyl-C₁-C₆-alkyl or hetaryl-C₁-C₆-alkyl having 5 to 6 ring atoms and one or two hetero atoms from the series consisting of oxygen, sulphur and nitrogen, in each case optionally substituted by halogen, C₁-C₆-alkyl, C₁-C₆-halogenoalkyl, C₁-C₆-alkoxy, C₁-C₆-halogenoalkoxy, cyano or nitro, or

A and D together represent a C₃-C₆-alkanediyl, C₃-C₆-alkenediyl or C₄-C₆-alkanedienediyl group in each of which one methylene group is optionally replaced by oxygen or sulphur and which is in each case optionally substituted by halogen, hydroxyl, mercapto, or by C₁-C₁₀-alkyl, C₁-C₆-alkoxy, C₁-C₆-alkylthio, C₃-C₇-cycloalkyl, phenyl or benzyloxy, each of which is optionally substituted by halogen, or by a further C₃-C₆-alkanediyl, C₃-C₆-alkenediyl or C₄-C₆-alkanedienediyl group which forms a fused ring and in each of which one methylene group is optionally replaced by oxygen or sulphur and which is optionally substituted by C₁-C₆-alkyl or in which two adjacent substituents together with the carbon atoms to which they are bonded optionally form a further saturated or unsaturated carbocycle having 5 or

contd.
a²

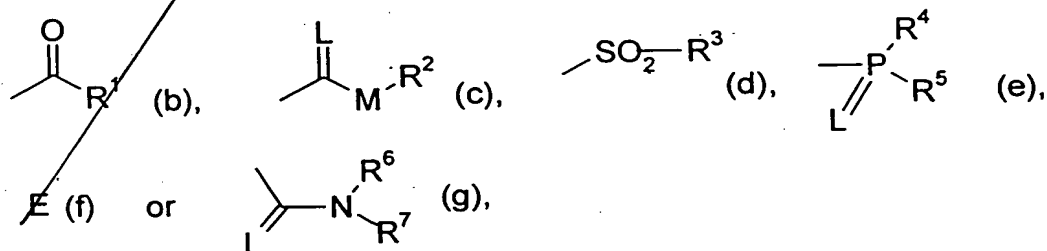
~~6 ring atoms, or~~

A and D together represent a C₃-C₆-alkanediyl or C₃-C₆-alkenediyl group in each of which one of the following groups



is optionally present,

G in the event that Het represents one of the radicals (1), (2), (3), (5) or (6), represents hydrogen (a) or, in the event that Het represents one of the radicals (1), (2), (3), (4), (5) or (6), represents one of the groups



Q2

In which

E represents a metal ion equivalent or an ammonium ion,

L represents oxygen or sulphur and

M represents oxygen or sulphur,

5

R¹ represents C₁-C₂₀-alkyl, C₂-C₂₀-alkenyl, C₁-C₈-alkoxy-C₁-C₈-alkyl, C₁-C₈-alkylthio-C₁-C₈-alkyl or poly-C₁-C₈-alkoxy-C₁-C₈-alkyl, each of which is optionally substituted by halogen, or represents C₃-C₈-cycloalkyl which is optionally substituted by halogen, C₁-C₆-alkyl or C₁-C₆-alkoxy and in which one or two methylene groups which are not directly adjacent are optionally replaced by oxygen and/or sulphur,

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or represents phenyl which is optionally substituted by halogen, cyano, nitro, C₁-C₆-alkyl, C₁-C₆-alkoxy, C₁-C₆-halogenoalkyl, C₁-C₆-halogenoalkoxy, C₁-C₆-alkylthio or C₁-C₆-alkylsulphonyl,

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or represents phenyl-C₁-C₆-alkyl which is optionally substituted by halogen, nitro, cyano, C₁-C₆-alkyl, C₁-C₆-alkoxy, C₁-C₆-halogenoalkyl or C₁-C₆-halogenoalkoxy,

or represents 5- or 6-membered hetaryl having one or two hetero atoms from the series consisting of oxygen, sulphur and nitrogen which is optionally substituted by halogen or C₁-C₆-alkyl,

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or represents phenoxy-C₁-C₆-alkyl which is optionally substituted by halogen or C₁-C₆-alkyl,

or represents 5- or 6-membered hetaryloxy-C₁-C₆-alkyl having one or two hetero atoms from the series consisting of oxygen, sulphur and nitrogen which is optionally substituted by halogen, amino or C₁-C₆-

a2

alkyl,

R² represents C₁-C₂₀-alkyl, C₂-C₂₀-alkenyl, C₁-C₈-alkoxy-C₂-C₈-alkyl or poly-C₁-C₈-alkoxy-C₂-C₈-alkyl, each of which is optionally substituted by halogen,

5

or represents C₃-C₈-cycloalkyl which is optionally substituted by halogen, C₁-C₆-alkyl or C₁-C₆-alkoxy, or

represents phenyl or benzyl, each of which is optionally substituted by halogen, cyano, nitro, C₁-C₆-alkyl, C₁-C₆-alkoxy, C₁-C₆-halogenoalkyl or C₁-C₆-halogenoalkoxy,

10

R³ represents C₁-C₈-alkyl which is optionally substituted by halogen, or represents phenyl or benzyl, each of which is optionally substituted by halogen, C₁-C₆-alkyl, C₁-C₆-alkoxy, C₁-C₄-halogenoalkyl, C₁-C₄-halogenoalkoxy, cyano or nitro,

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R⁴ and R⁵ independently of one another represent C₁-C₈-alkyl, C₁-C₈-alkoxy, C₁-C₈-alkylamino, di-(C₁-C₈-alkyl)amino, C₁-C₈-alkylthio or C₂-C₈-alkenylthio, each of which is optionally substituted by halogen, or represent phenyl, phenoxy or phenylthio, each of which is optionally substituted by halogen, nitro, cyano, C₁-C₄-alkoxy, C₁-C₄-halogenoalkoxy, C₁-C₄-alkylthio, C₁-C₄-halogenoalkylthio, C₁-C₄-alkyl or C₁-C₄-halogenoalkyl,

20

R⁶ and R⁷ independently of one another represent hydrogen, or represent C₁-C₈-alkyl, C₃-C₈-cycloalkyl, C₁-C₈-alkoxy, C₃-C₈-alkenyl or C₁-C₈-alkoxy-C₂-C₈-alkyl, each of which is optionally substituted by halogen, or represent phenyl or benzyl, each of which is optionally substituted by halogen, C₁-C₈-alkyl, C₁-C₈-halogenoalkyl or C₁-C₈-alkoxy, or together represent a C₃-C₆-alkylene radical which is optionally substituted by C₁-C₆-alkyl and in which one methylene group is optionally replaced by oxygen or

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a²

sulphur,

R¹³ represents hydrogen, or represents C₁-C₈-alkyl or C₁-C₈-alkoxy, each of which is optionally substituted by halogen, or represents C₃-C₈-cycloalkyl which is optionally substituted by halogen, C₁-C₄-alkyl or C₁-C₄-alkoxy and in which one methylene group is optionally replaced by oxygen or sulphur, or represents phenyl, phenyl-C₁-C₄-alkyl or phenyl-C₁-C₄-alkoxy, each of which is optionally substituted by halogen, C₁-C₆-alkyl, C₁-C₆-alkoxy, C₁-C₄-halogenoalkyl, C₁-C₄-halogenoalkoxy, nitro or cyano,

R¹⁴ represents hydrogen or C₁-C₈-alkyl or

R¹³ and R¹⁴ together represent C₄-C₆-alkanediyl,

R¹⁵ and R¹⁶ are identical or different and represent C₁-C₆-alkyl or

R¹⁵ and R¹⁶ together represent a C₂-C₄-alkanediyl radical which is optionally substituted by C₁-C₆-alkyl or by phenyl which is optionally substituted by halogen, C₁-C₄-alkyl, C₁-C₄-halogenoalkyl, C₁-C₄-alkoxy, C₁-C₄-halogenoalkoxy, nitro or cyano,

R¹⁷ and R¹⁸ independently of one another represent hydrogen, or represent C₁-C₈-alkyl which is optionally substituted by halogen, or represent phenyl which is optionally substituted by halogen, C₁-C₆-alkyl, C₁-C₆-alkoxy, C₁-C₄-halogenoalkyl, C₁-C₄-halogenoalkoxy, nitro or cyano, or

R¹⁷ and R¹⁸ together with the carbon atom to which they are bonded represent C₅-C₇-cycloalkyl which is optionally substituted by C₁-C₄-alkyl or C₁-C₄-alkoxy and in which one methylene group is optionally replaced by oxygen or sulphur and

R¹⁹ and R²⁰ independently of one another represent C₁-C₁₀-alkyl, C₂-C₁₀-alkenyl,

contd
a 2

C_1-C_{10} -alkoxy, C_1-C_{10} -alkylamino, C_3-C_{10} -alkenylamino, di- $(C_1-C_{10}$ -alkyl)amino or di- $(C_3-C_{10}$ -alkenyl)amino.

3. Compounds of the formula (I) according to Claim 1 in which

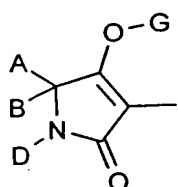
X represents fluorine, chlorine or bromine,

5 Y represents fluorine, chlorine, bromine or C_1-C_4 -alkyl,

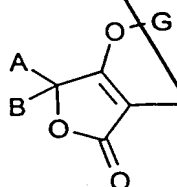
Z represents fluorine, chlorine, bromine or C_1-C_4 -alkyl,

where always one of the radicals Y and Z represents halogen while the other represents alkyl,

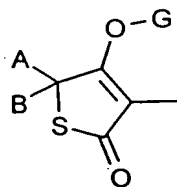
Het represents one of the groups



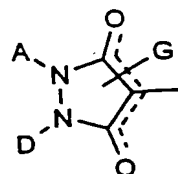
(1),



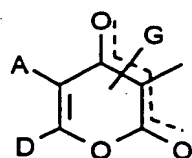
(2),



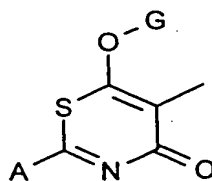
(3),



(4),



(5),



(6),

A represents hydrogen, or represents C_1-C_{10} -alkyl, C_2-C_6 -alkenyl, C_1-C_8 -alkoxy- C_1-C_6 -alkyl, poly- C_1-C_6 -alkoxy- C_1-C_6 -alkyl or C_1-C_8 -alkylthio- C_1-C_6 -alkyl, each of which is optionally substituted by fluorine or chlorine,

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contd.
a²

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or represents C₃-C₇-cycloalkyl which is optionally substituted by fluorine, chlorine, C₁-C₄-alkyl or C₁-C₄-alkoxy and in which one or two methylene groups which are not directly adjacent are optionally replaced by oxygen and/or sulphur, or represents phenyl, furanyl, pyridyl, imidazolyl, triazolyl, pyrazolyl, indolyl, thiazolyl, thienyl or phenyl-C₁-C₄-alkyl, each of which is optionally substituted by fluorine, chlorine, bromine, C₁-C₄-alkyl, C₁-C₄-halogenoalkyl, C₁-C₄-alkoxy, C₁-C₄-halogenoalkoxy, cyano or nitro,

B represents hydrogen, C₁-C₁₀-alkyl or C₁-C₆-alkoxy-C₁-C₄-alkyl, or

10

A, B and the carbon atom to which they are bonded represent C₃-C₈-cycloalkyl or C₅-C₈-cycloalkenyl in each of which one methylene group is optionally replaced by oxygen or sulphur and which are optionally substituted by C₁-C₆-alkyl, C₃-C₈-cycloalkyl, C₁-C₃-halogenoalkyl, C₁-C₆-alkoxy, C₁-C₆-alkylthio, fluorine, chlorine or phenyl, or

15

A, B and the carbon atom to which they are bonded represent C₅-C₆-cycloalkyl which is substituted by an alkylenediyl group which optionally contains one or two oxygen or sulphur atoms or by an alkylenedioxy or by an alkylenedithioyl group, this group, together with the carbon atom to which it is bonded forming a further five to seven-membered ring, or

20

A, B and the carbon atom to which they are bonded represent C₃-C₆-cycloalkyl or C₅-C₆-cycloalkenyl in which two substituents together with the carbon atoms to which they are bonded represent C₃-C₅-alkanediyl, C₃-C₅-alkenediyl or butadienediyl, each of which is optionally substituted by C₁-C₅-alkyl, C₁-C₅-alkoxy, fluorine, chlorine or bromine and in which in each case one methylene group is optionally replaced by oxygen or sulphur,

25

D represents hydrogen, or represents C₁-C₁₀-alkyl, C₃-C₆-alkenyl, C₃-C₆-

contd.
a²

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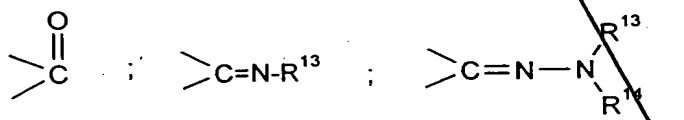
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alkinyl, C₁-C₈-alkoxy-C₂-C₆-alkyl, poly-C₁-C₆-alkoxy-C₂-C₆-alkyl or C₁-C₈-alkylthio-C₂-C₆-alkyl, each of which is optionally substituted by fluorine or chlorine, or represents C₃-C₇-cycloalkyl which is optionally substituted by fluorine, chlorine, C₁-C₄-alkyl, C₁-C₄-alkoxy or C₁-C₂-halogenoalkyl and in which one or two methylene groups which are not directly adjacent are optionally replaced by oxygen and/or sulphur, or represents phenyl, furanyl, imidazolyl, pyridyl, thiazolyl, pyrazolyl, pyrimidyl, pyrrolyl, thienyl, triazolyl or phenyl-C₁-C₄-alkyl, each of which is optionally substituted by fluorine, chlorine, bromine, C₁-C₄-alkyl, C₁-C₄-halogenoalkyl, C₁-C₄-alkoxy, C₁-C₄-halogenoalkoxy, cyano or nitro, or

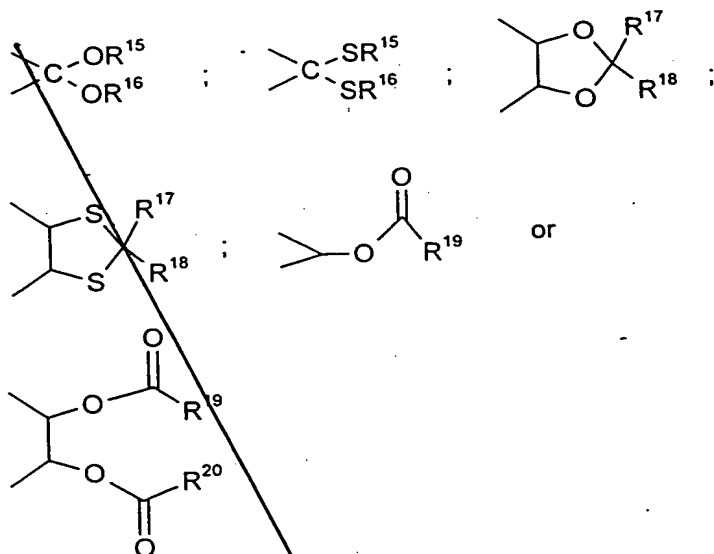
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A and D together represent a C₃-C₅-alkanediyl or C₃-C₅-alkenediyl group in each of which one methylene group is optionally replaced by oxygen or sulphur and which are optionally substituted by fluorine, chlorine, hydroxyl, mercapto, or by C₁-C₆-alkyl, C₁-C₄-alkoxy, C₁-C₄-alkylthio, C₃-C₆-cycloalkyl, phenyl or benzyloxy, each of which is optionally substituted by fluorine or chlorine, or

in which in each case one of the following groups

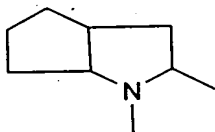


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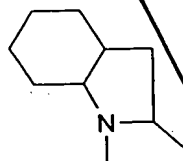


is optionally present;

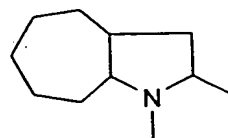
or A and D (in the case of the compounds of the formula (I-1)) together with the atoms to which they are bonded represent one of the groups AD-1 to AD-27



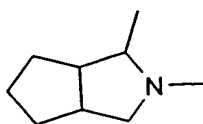
AD-1



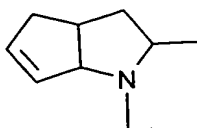
AD-2



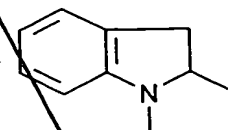
AD-3



AD-4



AD-5



AD-6

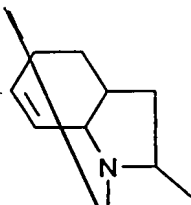
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contd.
a²

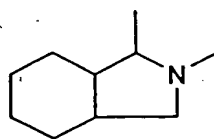
10017695-121401

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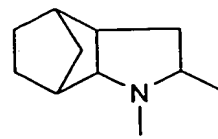
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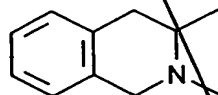
AD-7



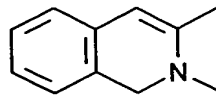
AD-8



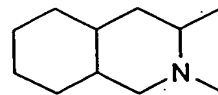
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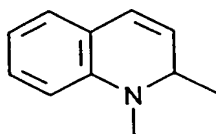
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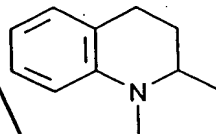
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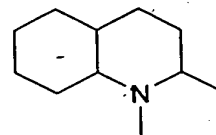
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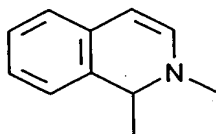
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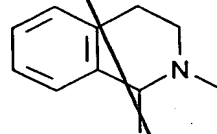
AD-14



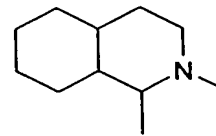
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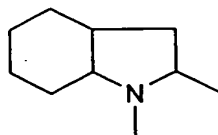
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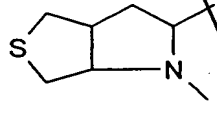
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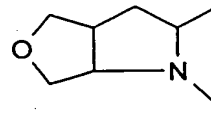
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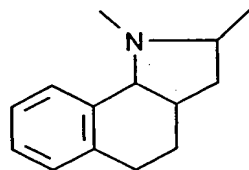
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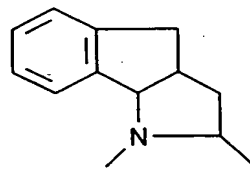
AD-20



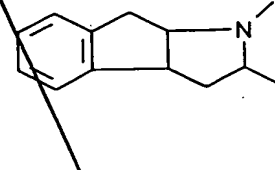
AD-21



AD-22

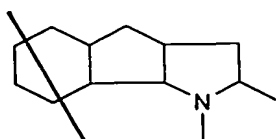


AD-23

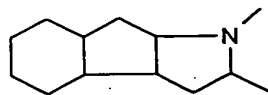


AD-24

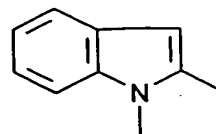
contd.
a²



AD-25

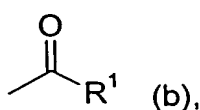


AD-26

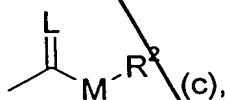


AD-27

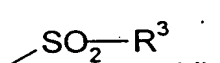
G in the event that Het represents one of the radicals (1), (2), (3), (5) or (6), represents hydrogen (a) or, in the event that Het represents one of the radicals (1), (2), (3), (4), (5) or (6), represents one of the groups



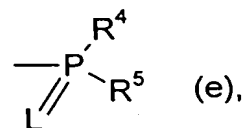
(b),



(c),

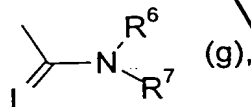


(d),



(e),

E (f) or



(g),

in which

E represents a metal ion equivalent or an ammonium ion,

L represents oxygen or sulphur and

M represents oxygen or sulphur,

R¹ represents C₁-C₁₆-alkyl, C₂-C₁₆-alkenyl, C₁-C₆-alkoxy-C₁-C₆-alkyl, C₁-C₆-alkylthio-C₁-C₆-alkyl or poly-C₁-C₆-alkoxy-C₁-C₆-alkyl, each of which is optionally substituted by fluorine or chlorine, or represents C₃-C₇-cycloalkyl which is optionally substituted by fluorine, chlorine, C₁-C₅-alkyl or C₁-C₅-alkoxy and in which one or two methylene groups which are not directly adjacent are optionally replaced by oxygen and/or sulphur,

or represents phenyl which is optionally substituted by fluorine, chlorine, bromine, cyano, nitro, C₁-C₄-alkyl, C₁-C₄-alkoxy, C₁-C₃-halogenoalkyl,

contd.
a²

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~~C₁-C₃-halogenoalkoxy, C₁-C₄-alkylthio or C₁-C₄-alkylsulphonyl,~~

~~or represents phenyl-C₁-C₄-alkyl which is optionally substituted by fluorine, chlorine, bromine, C₁-C₄-alkyl, C₁-C₄-alkoxy, C₁-C₃-halogenoalkyl or C₁-C₃-halogenoalkoxy,~~

~~or represents pyrazolyl, thiazolyl, pyridyl, pyrimidyl, furanyl or thienyl, each of which is optionally substituted by fluorine, chlorine, bromine or C₁-C₄-alkyl,~~

~~or represents phenoxy-C₁-C₅-alkyl which is optionally substituted by fluorine, chlorine, bromine or C₁-C₄-alkyl, or~~

~~represents pyridyloxy-C₁-C₅-alkyl, pyrimidyloxy-C₁-C₅-alkyl or thiazolyloxy-C₁-C₅-alkyl, each of which is optionally substituted by fluorine, chlorine, bromine, amino or C₁-C₄-alkyl,~~

~~R² represents C₁-C₁₆-alkyl, C₂-C₁₆-alkenyl, C₁-C₆-alkoxy-C₂-C₆-alkyl or poly-C₁-C₆-alkoxy-C₂-C₆-alkyl, each of which is optionally substituted by fluorine or chlorine,~~

~~or represents C₃-C₇-cycloalkyl which is optionally substituted by fluorine, chlorine, C₁-C₄-alkyl or C₁-C₄-alkoxy, or~~

~~represents phenyl or benzyl, each of which is optionally substituted by fluorine, chlorine, bromine, cyano, nitro, C₁-C₄-alkyl, C₁-C₃-alkoxy, C₁-C₃-halogenoalkyl or C₁-C₃-halogenoalkoxy,~~

~~R³ represents C₁-C₆-alkyl which is optionally substituted by fluorine or chlorine, or represents phenyl or benzyl, each of which is optionally substituted by fluorine, chlorine, bromine, C₁-C₅-alkyl, C₁-C₅-alkoxy, C₁-C₃-halogenoalkyl, C₁-C₃-halogenoalkoxy, cyano or nitro,~~

contd.
a²

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TOTAL 56921001

R⁴ and R⁵ independently of one another represent C₁-C₆-alkyl, C₁-C₆-alkoxy, C₁-C₆-alkylamino, di-(C₁-C₆-alkyl)amino, C₁-C₆-alkylthio or C₃-C₄-alkenylthio, each of which is optionally substituted by fluorine or chlorine, or represent phenyl, phenoxy or phenylthio, each of which is optionally substituted by fluorine, chlorine, bromine, nitro, cyano, C₁-C₃-alkoxy, C₁-C₃-halogenoalkoxy, C₁-C₃-alkylthio, C₁-C₃-halogenoalkylthio, C₁-C₃-alkyl or C₁-C₃-halogenoalkyl,

R⁶ and R⁷ independently of one another represent hydrogen, or represent C₁-C₆-alkyl, C₃-C₆-cycloalkyl, C₁-C₆-alkoxy, C₃-C₆-alkenyl or C₁-C₆-alkoxy-C₂-C₆-alkyl, each of which is optionally substituted by fluorine or chlorine, or represent phenyl or benzyl, each of which is optionally substituted by fluorine, chlorine, bromine, C₁-C₅-halogenoalkyl, C₁-C₅-alkyl or C₁-C₅-alkoxy, or together represent a C₃-C₆-alkylene radical which is optionally substituted by C₁-C₄-alkyl and in which one methylene group is optionally replaced by oxygen or sulphur,

R¹³ represents hydrogen, or represents C₁-C₆-alkyl or C₁-C₆-alkoxy, each of which is optionally substituted by fluorine or chlorine, or represents C₃-C₇-cycloalkyl which is optionally substituted by fluorine, C₁-C₂-alkyl or C₁-C₂-alkoxy and in which one methylene group is optionally replaced by oxygen or sulphur, or represents phenyl, phenyl-C₁-C₃-alkyl or phenyl-C₁-C₂-alkoxy, each of which is optionally substituted by fluorine, chlorine, bromine, C₁-C₅-alkyl, C₁-C₅-alkoxy, C₁-C₂-halogenoalkyl, C₁-C₂-halogenoalkoxy, nitro or cyano,

R¹⁴ represents hydrogen or C₁-C₆-alkyl or

R¹³ and R¹⁴ together represent C₄-C₆-alkanediyl,

R¹⁵ and R¹⁶ are identical or different and represent C₁-C₄-alkyl or

R¹⁵ and R¹⁶ together represent a C₂-C₃-alkanediyl radical which is optionally

contd
a²

substituted by C₁-C₄-alkyl or by phenyl which is optionally substituted by fluorine, chlorine, bromine, C₁-C₂-alkyl, C₁-C₂-halogenoalkyl, C₁-C₂-alkoxy, C₁-C₂-halogenoalkoxy, nitro or cyano,

5 R¹⁷ and R¹⁸ independently of one another represent hydrogen, or represent C₁-C₈-alkyl which is optionally substituted by fluorine or chlorine, or represent phenyl which is optionally substituted by fluorine, chlorine, C₁-C₄-alkyl, C₁-C₄-alkoxy, C₁-C₂-halogenoalkyl, C₁-C₂-halogenoalkoxy, nitro or cyano, or

10 R¹⁷ and R¹⁸ together with the carbon atom to which they are bonded represent C₅-C₆-cycloalkyl which is optionally substituted by C₁-C₃-alkyl or C₁-C₃-alkoxy and in which one methylene group is optionally replaced by oxygen or sulphur, and

15 R¹⁹ and R²⁰ independently of one another represent C₁-C₆-alkyl, C₂-C₆-alkenyl, C₁-C₆-alkoxy, C₁-C₆-alkylamino, C₃-C₆-alkenylamino, di-(C₁-C₆-alkyl)amino or di-(C₃-C₆-alkenyl)amino.

4. Compounds of the formula (I) according to Claim 1, in which

X represents fluorine, chlorine or bromine,

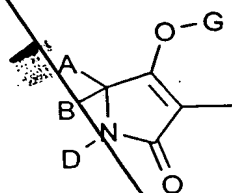
Y represents fluorine, chlorine, bromine, methyl, ethyl, n-propyl or isopropyl,

20 Z represents fluorine, chlorine, bromine, methyl, ethyl, n-propyl or isopropyl,

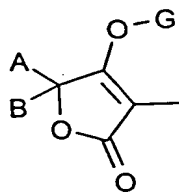
where always one of the radicals Y and Z represents halogen while the other represents alkyl,

contd.
a²

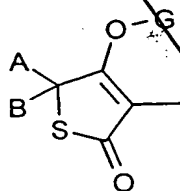
Net represents one of the groups



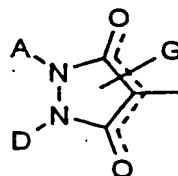
(1).



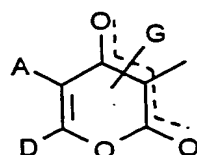
(2).



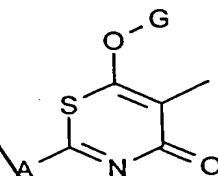
(3).



(4).



(5).



(6).

A represents hydrogen, or represents C₁-C₈-alkyl, C₂-C₄-alkenyl, C₁-C₆-alkoxy-C₁-C₄-alkyl, poly-C₁-C₄-alkoxy-C₁-C₄-alkyl or C₁-C₆-alkylthio-C₁-C₄-alkyl, each of which is optionally substituted by fluorine or chlorine, or represents C₃-C₆-cycloalkyl which is optionally substituted by fluorine, chlorine, methyl or methoxy and in which one or two methylene groups which are not directly adjacent are optionally replaced by oxygen and/or sulphur, or represents phenyl, pyridyl or benzyl, each of which is optionally substituted by fluorine, chlorine, bromine, methyl, ethyl, n-propyl, iso-propyl, methoxy, ethoxy, trifluoromethyl, trifluoromethoxy, cyano or nitro,

B represents hydrogen, C₁-C₈-alkyl or C₁-C₄-alkoxy-C₁-C₂-alkyl, or

A, B and the carbon atom to which they are bonded represent C₃-C₈-cycloalkyl or C₅-C₈-cycloalkenyl in each of which one methylene group is optionally replaced by oxygen or sulphur and which are optionally

contd.
a²

substituted by methyl, ethyl, n-propyl, iso-propyl, butyl, iso-butyl, sec-butyl, tert-butyl, cyclohexyl, trifluoromethyl, methoxy, ethoxy, n-propoxy, iso-propoxy, butoxy, iso-butoxy, sec-butoxy, tert-butoxy, methylthio, ethylthio, fluorine, chlorine or phenyl, or

5

A, B and the carbon atom to which they are bonded represent C₅-C₆-cycloalkyl which is substituted by an alkylenediyl group which optionally contains an oxygen or sulphur atom or by an alkylenedioxy group, this alkylenediyl or alkylenedioxy group together with the carbon atom to which it is bonded forming a further five to six-membered ring, or

10

A, B and the carbon atom to which they are bonded represent C₃-C₆-cycloalkyl or C₅-C₆-cycloalkenyl in which two substituents together with the carbon atoms to which they are bonded represent C₃-C₄-alkanediyl, C₃-C₄-alkenediyl or butadienediyl, in each of which one methylene group is optionally replaced by oxygen or sulphur,

15

D represents hydrogen, or represents C₁-C₈-alkyl, C₃-C₄-alkenyl, C₃-C₄-alkinyl, C₁-C₆-alkoxy-C₂-C₄-alkyl, poly-C₁-C₄-alkoxy-C₂-C₄-alkyl, C₁-C₄-alkylthio-C₂-C₄-alkyl or C₃-C₆-cycloalkyl, in which one or two methylene groups which are not directly adjacent are replaced by oxygen and/or sulphur, in each case optionally substituted by fluorine or chlorine, or represents phenyl, furanyl, pyridyl, thienyl or benzyl, each of which is optionally substituted by fluorine, chlorine, bromine, methyl, ethyl, n-propyl, iso-propyl, methoxy, ethoxy, trifluoromethyl, trifluoromethoxy, cyano or nitro,

20

25

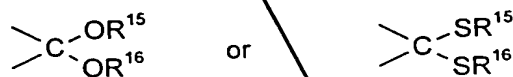
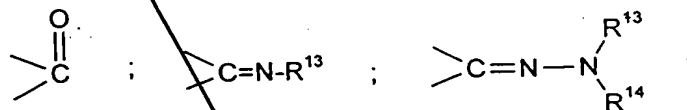
or

A and D together represent a C₃-C₅-alkanediyl or C₃-C₅-alkenediyl group in each of which one methylene group is optionally replaced by oxygen or sulphur and which are optionally substituted by fluorine, chlorine,

contd.
a²

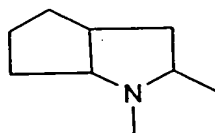
hydroxyl, mercapto, or by C₁-C₆-alkyl, C₁-C₄-alkoxy, C₁-C₄-alkylthio, C₃-C₆-cycloalkyl, phenyl or benzyloxy, each of which is optionally substituted by fluorine or chlorine, or

in which, in each case one of the following groups

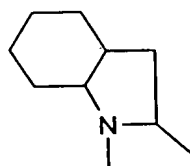


is optionally present,

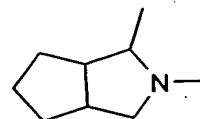
or A and D, in the case of the compounds of the formula (I-1), together with the atoms to which they are bonded represent one of the following groups:



AD-1



AD-2

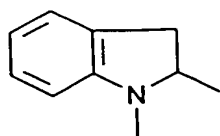


AD-4

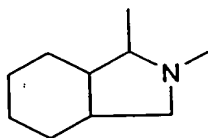
contd.
a²

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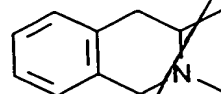
5



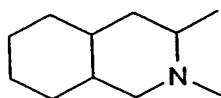
AD-6



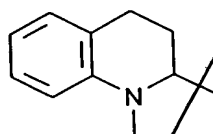
AD-8



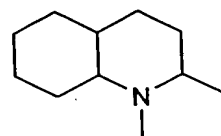
AD-10



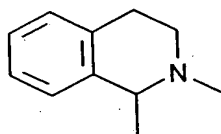
AD-12



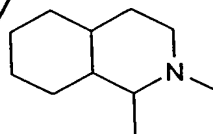
AD-14



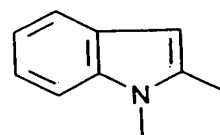
AD-15



AD-17

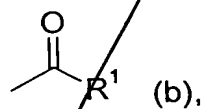


AD-18

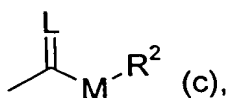


AD-27

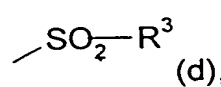
G in the event that Het represents one of the radicals (1), (2), (3), (5) or (6), represents hydrogen (a) or, in the event that Het represents one of the radicals (1), (2), (3), (4), (5) or (6), represents one of the groups



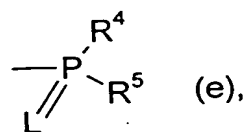
(b),



(c),



(d),

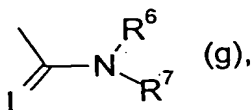


(e),



(f)

or



(g),

10

contd.
a²

in which

E represents a metal ion equivalent or an ammonium ion,

L represents oxygen or sulphur and

M represents oxygen or sulphur,

R¹ represents C₁-C₁₄-alkyl, C₂-C₁₄-alkenyl, C₁-C₄-alkoxy-C₁-C₆-alkyl, C₁-C₄-alkylthio-C₁-C₆-alkyl or poly-C₁-C₄-alkoxy-C₁-C₄-alkyl, each of which is optionally substituted by fluorine or chlorine, or represents C₃-C₆-cycloalkyl which is optionally substituted by fluorine, chlorine, methyl, ethyl, n-propyl, i-propyl, n-butyl, i-butyl, tert-butyl, methoxy, ethoxy, n-propoxy or iso-propoxy and in which one or two methylene groups which are not directly adjacent are optionally replaced by oxygen and/or sulphur,

or represents phenyl which is optionally substituted by fluorine, chlorine, bromine, cyano, nitro, methyl, ethyl, n-propyl, i-propyl, methoxy, ethoxy, trifluoromethyl, trifluoromethoxy, methylthio, ethylthio, methylsulphonyl or ethylsulphonyl,

or represents benzyl which is optionally substituted by fluorine, chlorine, bromine, methyl, ethyl, n-propyl, i-propyl, methoxy, ethoxy, trifluoromethyl or trifluoromethoxy,

or represents furanyl, thienyl or pyridyl, each of which is optionally substituted by fluorine, chlorine, bromine, methyl or ethyl,

or represents phenoxy-C₁-C₄-alkyl which is optionally substituted by fluorine, chlorine, methyl or ethyl, or

contd.
a²

represents pyridyloxy-C₁-C₄-alkyl, pyrimidyloxy-C₁-C₄-alkyl or thiazolyloxy-C₁-C₄-alkyl, each of which is optionally substituted by fluorine, chlorine, amino, methyl or ethyl,

R² represents C₁-C₁₄-alkyl, C₂-C₁₄-alkenyl, C₁-C₄-alkoxy-C₂-C₆-alkyl or poly-C₁-C₄-alkoxy-C₂-C₆-alkyl, each of which is optionally substituted by fluorine or chlorine,

or represents C₃-C₆-cycloalkyl which is optionally substituted by fluorine, chlorine, cyano, nitro, methyl, ethyl, n-propyl, iso-propyl, or methoxy, ethoxy, trifluoromethyl or trifluoromethoxy,

or represents phenyl or benzyl, each of which is optionally substituted by fluorine, chlorine, methyl, ethyl, n-propyl, iso-propyl or methoxy, cyano, nitro, ethoxy, trifluoromethyl or trifluoromethoxy,

R³ represents methyl, ethyl, propyl or isopropyl, each of which is optionally substituted by fluorine or chlorine, or represents phenyl or benzyl, each of which is optionally substituted by fluorine, chlorine, bromine, methyl, ethyl, propyl, iso-propyl, tert-butyl, methoxy, ethoxy, isopropoxy, tert-butoxy, trifluoromethyl, trifluoromethoxy, cyano or nitro,

R⁴ and R⁵ independently of one another represent C₁-C₄-alkyl, C₁-C₄-alkoxy, C₁-C₄-alkylamino, di-(C₁-C₄-alkyl)amino or C₁-C₄-alkylthio, each of which is optionally substituted by fluorine or chlorine, or represent phenyl, phenoxy or phenylthio, each of which is optionally substituted by fluorine, chlorine, bromine, nitro, cyano, methyl, methoxy, trifluoromethyl or trifluoromethoxy,

R⁶ and R⁷ independently of one another represent hydrogen, or represent C₁-C₄-alkyl, C₃-C₆-cycloalkyl, C₁-C₄-alkoxy, C₃-C₄-alkenyl or C₁-C₄-alkoxy-C₂-C₄-alkyl, each of which is optionally substituted by fluorine or chlorine, or represent phenyl or benzyl, each of which is optionally substituted by

concl'd.
a²

fluorine, chlorine, bromine, methyl, methoxy or trifluoromethyl, or together represent a C₅-C₆-alkylene radical which is optionally substituted by methyl or ethyl and in which one methylene group is optionally replaced by oxygen or sulphur,

5 R¹³ represents hydrogen, or represents C₁-C₄-alkyl or C₁-C₄-alkoxy, each of which is optionally substituted by fluorine or chlorine, or represents C₃-C₆-cycloalkyl, or represents phenyl, phenyl-C₁-C₂-alkyl or benzyloxy, each of which is optionally substituted by fluorine, chlorine, bromine, methyl, ethyl, iso-propyl, tert-butyl, methoxy, ethoxy, iso-propoxy, tert-butoxy, trifluoromethyl, trifluoromethoxy, nitro or cyano,

R¹⁴ represents hydrogen or C₁-C₄-alkyl, or

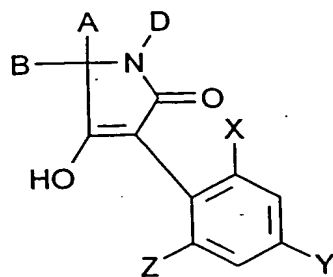
R¹³ and R¹⁴ together represent C₄-C₆-alkanediyl,

R¹⁵ and R¹⁶ are identical or different and represent methyl or ethyl, or

R¹⁵ and R¹⁶ together represent a C₂-C₃-alkanediyl radical which is optionally substituted by methyl, ethyl, n-propyl, iso-propyl, n-butyl, iso-butyl, sec-butyl or tert-butyl, or by phenyl which is optionally substituted by fluorine, chlorine, methoxy, trifluoromethyl, trifluoromethoxy, nitro or cyano.

5. Process for the preparation of compounds of the formula (I) according to Claim 1, characterized in that

(A) compounds of the formula (I-1-a)



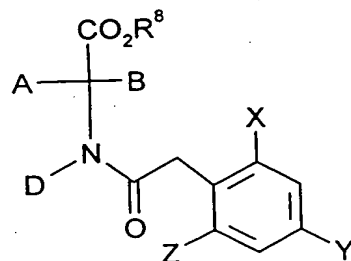
(I-1-a)

in which

A, B, D, X, Y and Z have the abovementioned meanings,

are obtained when

compounds of the formula (II)



(II)

in which

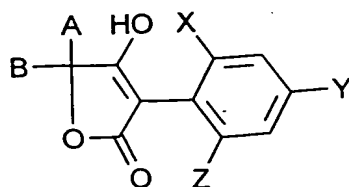
A, B, D, X, Y and Z have the abovementioned meanings

and

R^8 represents alkyl,

are subjected to intramolecular condensation in the presence of a diluent
and in the presence of a base,

(B) compounds of the formula (I-2-a)



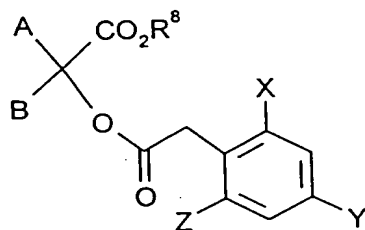
(I-2-a)

in which

A, B, X, Y and Z have the abovementioned meanings,

are obtained when

compounds of the formula (III)



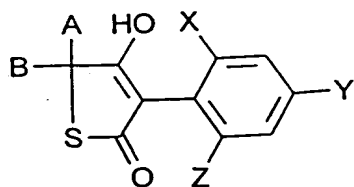
(III)

in which

A, B, X, Y, Z and R⁸ have the abovementioned meanings,

are subjected to intramolecular condensation in the presence of a diluent
and in the presence of a base,

(C) compounds of the formula (I-3-a)



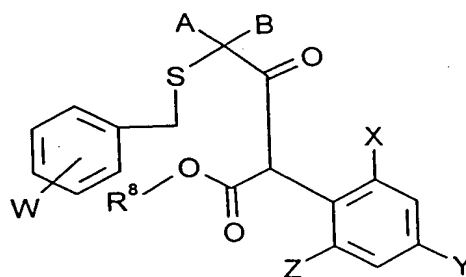
(I-3-a)

in which

A, B, X, Y and Z have the abovementioned meanings,

are obtained when

compounds of the formula (IV)



(IV)

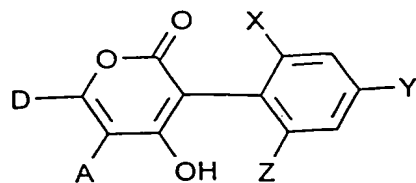
in which

A, B, X, Y, Z and R⁸ have the abovementioned meanings and

W represents hydrogen, halogen, alkyl or alkoxy,

are subjected to intramolecular cyclization, if appropriate in the presence of a diluent and in the presence of an acid,

(E) compounds of the formula (I-5-a)



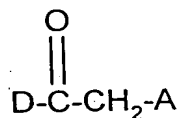
(I-5-a)

in which

A, D, X, Y and Z have the abovementioned meanings

are obtained when

compounds of the formula (VIII)

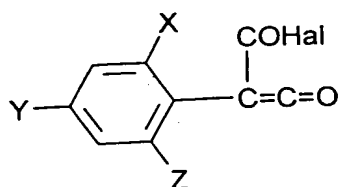


(VIII)

in which

A and D have the abovementioned meanings,

are reacted with compounds of the formula (V)



(V)

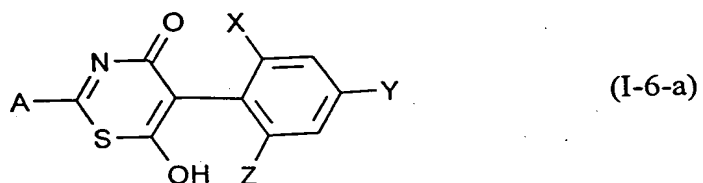
in which

X, Y and Z have the abovementioned meanings and

Hal represents halogen,

if appropriate in the presence of a diluent and if appropriate in the presence of an acid acceptor,

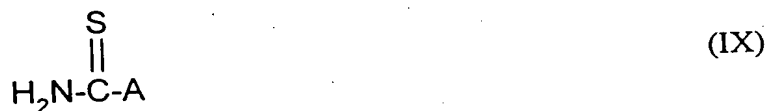
(F) the compounds of the formula (I-6-a)



in which

A, X, Y and Z have the abovementioned meanings,

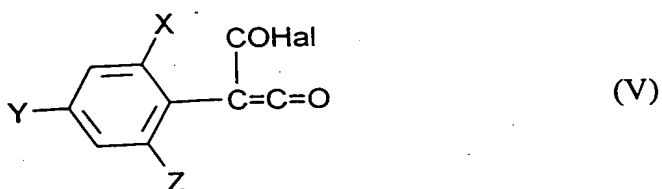
are obtained when compounds of the formula (IX)



in which

A has the abovementioned meaning,

are reacted with compounds of the formula (V)

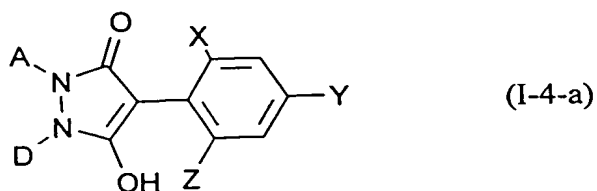


in which

Hal, X, Y and Z have the abovementioned meanings,

if appropriate in the presence of a diluent and if appropriate in the presence of an acid acceptor,

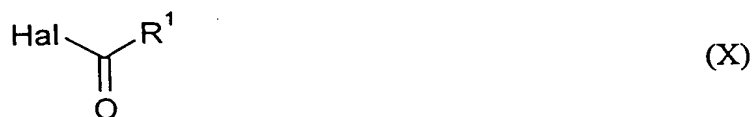
and, if appropriate, the resulting compounds of the formulae (I-1-a), (I-2-a) to (I-3-a), (I-5-a) and (I-6-a), or compounds of the formula (I-4-a)



in which

A, D, X, Y and Z have the abovementioned meanings, are in each case reacted

(G) α) with acid halides of the formula (X)



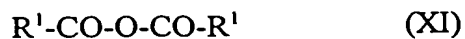
in which

R^1 has the abovementioned meaning and

Hal represents halogen

or

β) with carboxylic anhydrides of the formula (XI)



in which

R^1 has the abovementioned meaning,

if appropriate in the presence of a diluent and if appropriate in the presence of an acid-binding agent,

or

(H) are reacted with chloroformic esters or chloroformic thioesters of the formula (XII)



in which

R^2 and M have the abovementioned meanings,

if appropriate in the presence of a diluent and if appropriate in the presence of an acid-binding agent,

or

(I) α) are reacted with chloromonothioformic esters or chlorodithioformic esters of the formula (XIII)



in which

M and R^2 have the abovementioned meanings,

if appropriate in the presence of a diluent and if appropriate in the presence of an acid-binding agent,

5 or

β) are reacted with carbon disulphide and subsequently with compounds of the formula (XIV)



in which

10 R^2 has the abovementioned meaning and

Hal represents chlorine, bromine or iodine,

if appropriate in the presence of a diluent and if appropriate in the presence of a base,

or

15 (J) are reacted with sulphonyl chlorides of the formula (XV)



in which

R^3 has the abovementioned meaning,

if appropriate in the presence of a diluent and if appropriate in the presence of an acid-binding agent,

or

(K) are reacted with phosphorus compounds of the formula (XVI)



in which

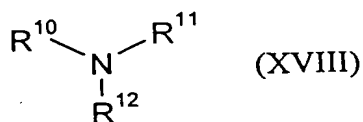
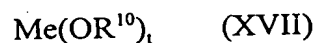
L, R⁴ and R⁵ have the abovementioned meanings and

Hal represents halogen,

if appropriate in the presence of a diluent and if appropriate in the presence of an acid-binding agent,

or

(L) are reacted with metal compounds or amines of the formulae (XVII) or (XVIII)



in which

Me represents a mono- or divalent metal,

t represents the number 1 or 2 and

R^{10} , R^{11} and R^{12} independently of one another represent hydrogen or alkyl,

if appropriate in the presence of a diluent,

or

(M) α) are reacted with isocyanates or isothiocyanates of the formula (XIX)



in which

R^6 and L have the abovementioned meanings,

if appropriate in the presence of a diluent and if appropriate in the presence of a catalyst, or

β) are reacted with carbamoyl chlorides or thiocarbamoyl chlorides of the formula (XX)

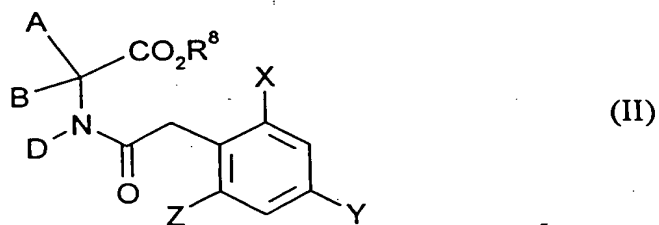


in which

L, R^6 and R^7 have the abovementioned meanings,

if appropriate in the presence of a diluent and if appropriate in the presence of an acid-binding agent.

6. Compounds of the formula (II)

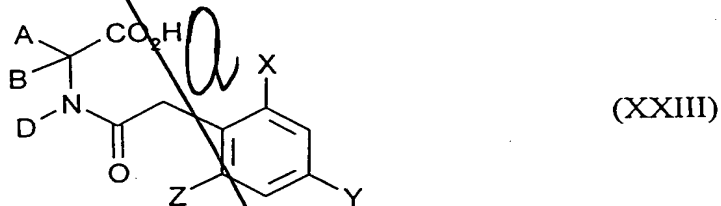


in which

A, B, D, X, Y and Z have the meanings given in Claim 1 and

R⁸ represents alkyl.

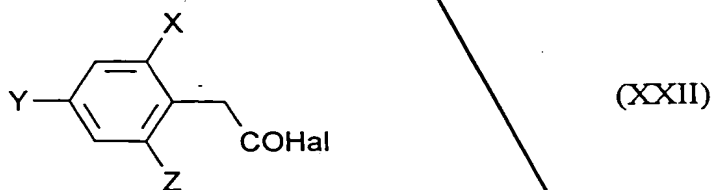
7. Compounds of the formula (XXIII)



in which

A, B, D, X, Y and Z have the meanings given in Claim 1.

8. Compounds of the formula (XXII)

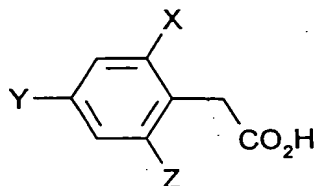


in which

X, Y and Z have the meanings given in Claim 1 and

Hal represents chlorine or bromine.

9. Compounds of the formula (XXV)



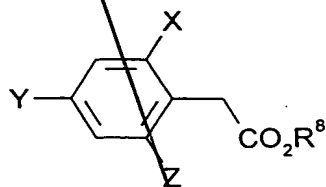
(XXV)

in which

a

X, Y and Z have the meanings given in Claim 1, with the exception of 2,4-dichloro-6-methylphenylacetic acid.

10. Compounds of the formula (XXVI)



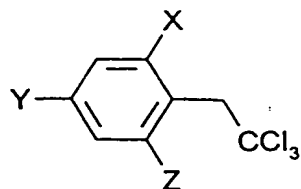
(XXVI)

in which

X, Y and Z have the abovementioned meanings and

R⁸ represents alkyl.

11. Compounds of the formula (XXVII)

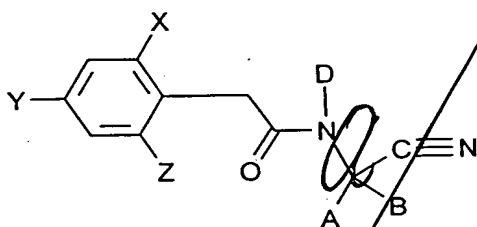


(XXVII)

in which

X, Y and Z have the meanings given in Claim 1.

12. Compounds of the formula (XXXI)

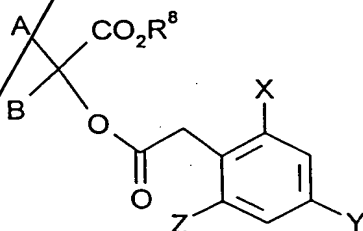


(XXXI)

in which

A, B, D, X, Y and Z have the meanings given in Claim 1.

13. Compounds of the formula (III)



(III)

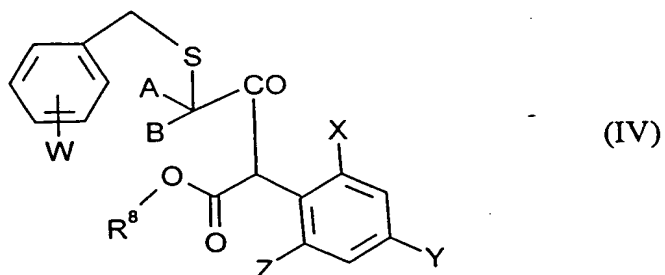
in which

A, B, X, Y and Z have the abovementioned meanings and

R⁸

represents alkyl.

14. Compounds of the formula (IV)

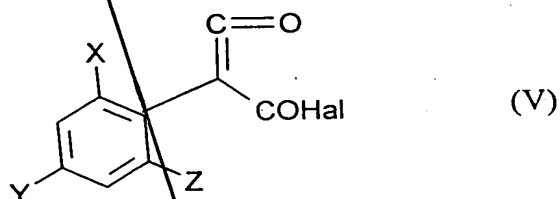


in which

A, B, W, X, Y and Z have the meanings given in Claim 1 and

R⁸ represents alkyl.

15. Compounds of the formula (V)

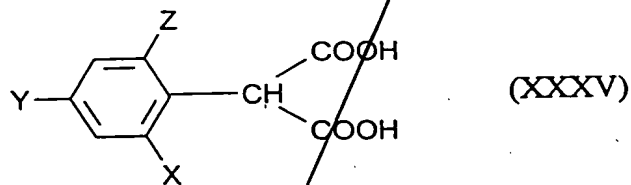


in which

X, Y and Z have the meanings given in Claim 1 and

Hal represents chlorine or bromine.

16. Compounds of the formula (XXXV)



in which

X, Y and Z have the meanings given in Claim 1.

17. Pesticides and herbicides, characterized in that they comprise at least one compound of the formula (I) according to Claim 1.
18. Use of compounds of the formula (I) according to Claim 1 for combating pests and weeds.
19. Method of combating pests and weeds, characterized in that compounds of the formula (I) according to Claim 1 are allowed to act on pests and/or their environment or on weeds and/or their environment.
20. Process for the preparation of pesticides and herbicides, characterized in that compounds of the formula (I) according to Claim 1 are mixed with extenders and/or surface-active agents.
21. Use of compounds of the formula (I) according to Claim 1 for the preparation of pesticides and herbicides.

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Add
a³